

# **Ozone and Ambient Air Quality**

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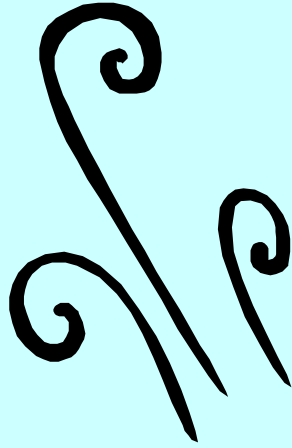
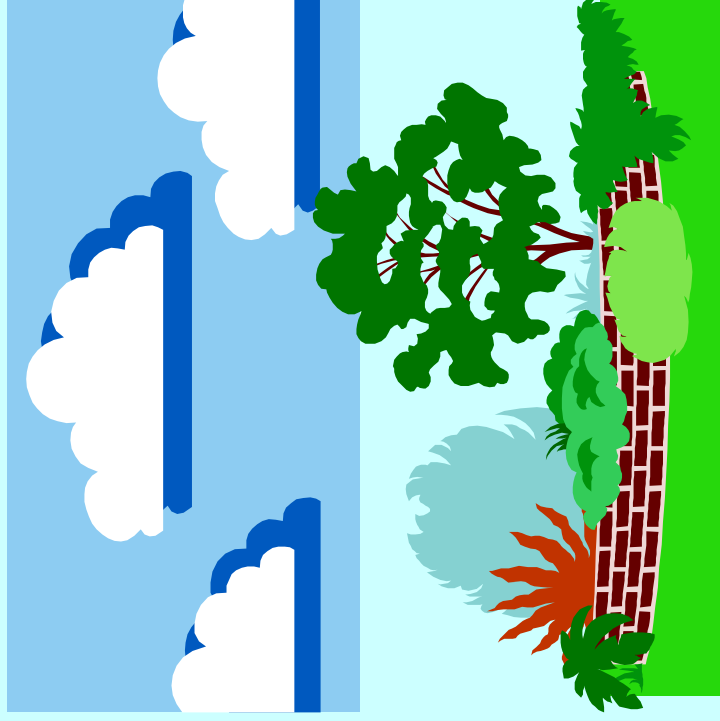
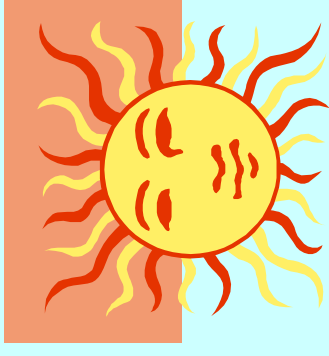
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## **Major Issues in Designating Areas for the new 8-Hour Standard**

**CAA - Task Force - Session 2**

**May 20, 2003**

*Setting the stage.....*



*Introducing Zach and Waldo.....  
and some friends....*

*...some important characters in the  
next Ozone chapter!*

*This is Zach.....and some friends!*



*.....and this is **Waldo**.....*



*.....and these guys are Tony and Chris.*





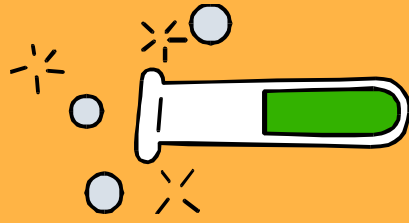
*.....all examples of the people close to us who  
represent the large population at risk for lung  
disease and ozone impacts.*



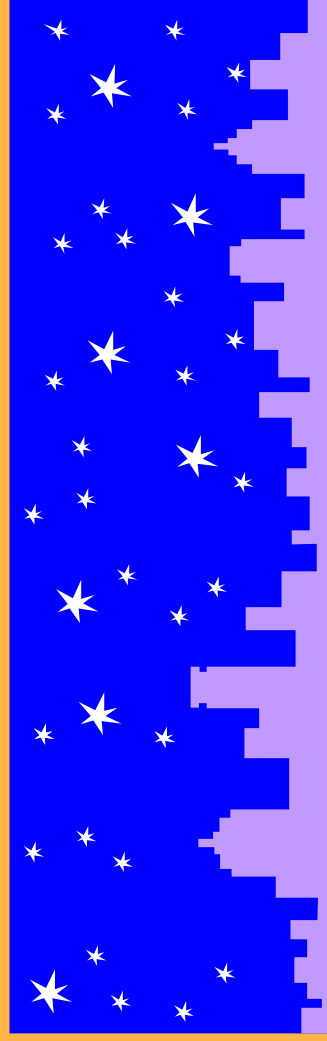
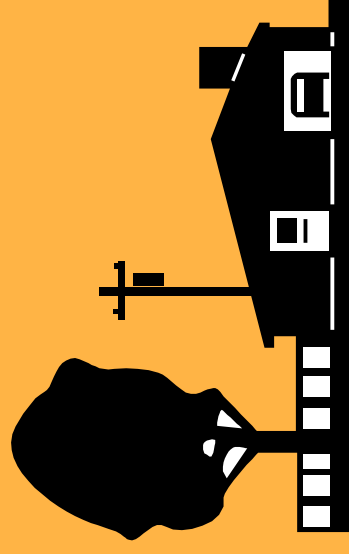
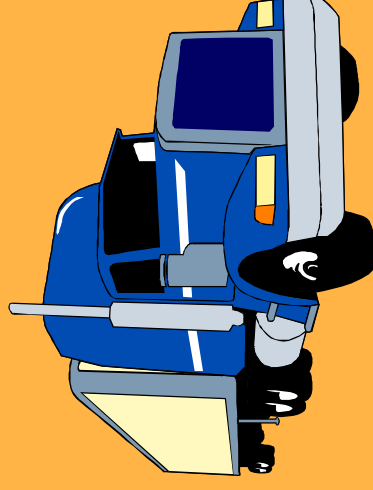
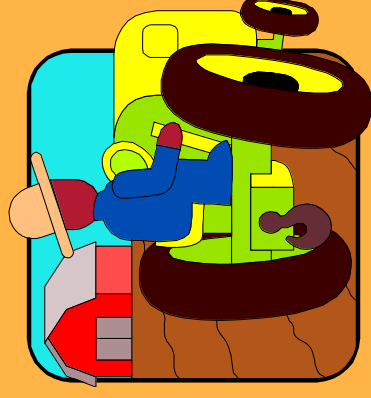
***The antagonist of our story...>***



...Introducing Ozone!!!.....



$\text{NO}_x + \text{VOC}$





## Low Level Ozone



*....combined in sunlight and  
humidity to produce  
photochemical smog*



# **Ozone-Related Health Effects of Concern**

- ▶ **Difficulty in breathing, shortness of breath**
- ▶ **Aggravated/prolonged coughing and chest pain**
- ▶ **Increased aggravation of asthma, susceptibility to respiratory infection resulting in increased hospital admissions and emergency room visits**
- ▶ **Repeated exposures could result in chronic inflammation and irreversible structural changes in the lungs, that can lead to premature aging of the lungs and illness such as bronchitis and emphysema**
- ▶ **Growing evidence suggests association with premature death**

***Approximately 3 1/2 to 4 Million  
Wisconsin Residents live in areas  
with elevated ozone concentrations  
during the summer.***

***Of those, at least 300,000 are “at risk”  
for its respiratory health impact.***

*... which all means David has to use his inhaler more often and has to spend time inside instead of outside during high ozone episodes!*



*.....and, finally, the protagonist of our  
story,*

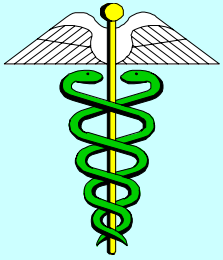
***Ms NAAQS!!!!!!***

***NAAQS ?***

## **What are NAAQS ?....**

- **NAAQS are “national ambient air quality standards”**
- **NAAQS are a critical public health policy that have been adopted by most of the world**
- **NAAQS - provide for a “healthy” level of outdoor air quality everywhere in the country - like drinking water standards**
- **NAAQS exist for 6 discrete air pollutants including ozone (eg - photochemical smog), particulate matter, lead, CO, NO<sub>2</sub> and SO<sub>x</sub> (*Title 1 - Clean Air Act*)**
- **NAAQS set AQ monitoring priorities - measuring where & by how much local air quality exceeds healthy levels (*concentration basis ranges from 1-hour peak to annual average*)**





# Different Considerations Used in Setting and Achieving NAAQS

## *Setting the Standards*

- ▶ Health Effects
- ▶ Environmental Effects

## *Achieving the Standards*

- ▶ Costs
- ▶ Time to attain the standards

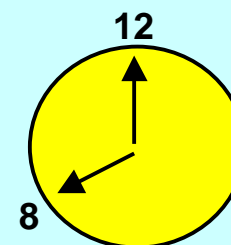
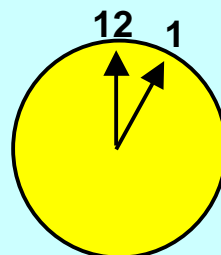
## *8-Hr Ozone NAAQS*

**8-Hr NAAQS look at the concentration of the pollutant averaged over an 8 hour period**

The medical community feels the 8-hr ozone standard is a better health definition than the 1-hr standard because it addresses the more chronic exposure impacts...more typical of most areas...more important to long term health.

The 8-hr ozone standard reduces but does not eliminate year-to-year variation based on meteorology which hindered 1-hr area definitions.

# A “new form” for the Ozone NAAQS



Form of Standard	1-hr NAAQS	8-hr NAAQS
Avg time	1-hour	8-hour
Level	0.12 ppm	0.08 ppm
Form	exceedance-based	concentration-based
Air Quality Indicator	daily max 1-hr conc within day	daily max 8-hr conc starting within day
NAAQS Statistic	annual estimated exceedances	annual 4th high 8-hr daily max conc
Rounding	0.125 ppm--smallest number greater than the 0.12 ppm NAAQS level	0.085 ppm--smallest number greater than 0.08 ppm NAAQS level
Compliance period	three consecutive years	three consecutive years
Attainment Test	avg expected exceed'c rate $\leq 1.0$	avg annual 4th high daily max 8-hour conc $\leq 0.08$ ppm

***Achieving “good” (or “better”) air  
quality.....how do we do it?***

## **Key Pieces - AQ “Attainment” Planning under the Clean Air Act**

- Define or “designate” areas for Ozone & PM-2.5 - either “attainment” or “nonattainment”
- Evaluate where to reduce pollution
- Evaluate how much pollutant reduction is needed to reach Regional Attainment
- Develop and Adopt Formal Plans (SIPs) which include enforceable emission control rules and control installation deadlines
- Attain the Standards and Redesignate areas to reflect the better air quality

## **“Nonattainment” - What it Means**

- Generally “nonattainment” defines areas where monitors show that air quality does not meet ambient standards - in this case 8-hr ozone - reflecting public health concern
- Nonattainment status also helps define an area where particular planning or emission control program requirements might apply
- NA status tends to focus the air quality management effort - monitoring, inventory, modeling, and \$ resources - specific to the pollutant

## .....what the Air Program is doing.....

- » Adopting the new Ambient Standards
- » Informing the Public regarding their AQ status
- » Recommend Area Designations for new Standards
- » Perform ongoing Monitoring, Inventory & Modeling Efforts
- » Starting a SIP Development Process for 8-hr Ozone -
  - » Modeling
  - » Control Options Development
  - » Control Plan Dialogue w/ Stakeholders



*Basic WI Ozone SIP (Clean Air Plan)*  
*Schedule....*

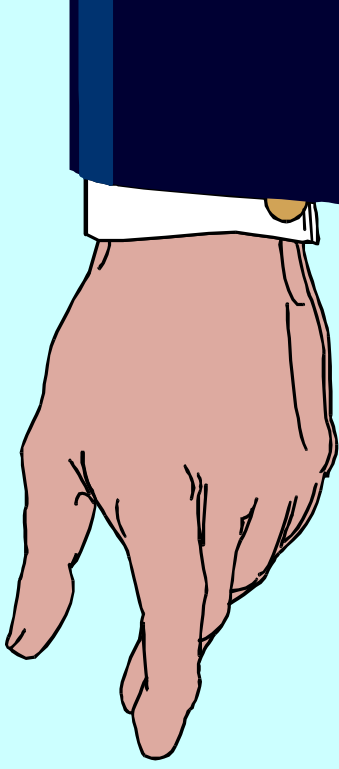
- Final Area Designations : 2004 (April - Ozone)
- Technical Evaluations : Ongoing
- Complete SIP Modeling : 2005-2006
- Major SIP Submittal : 2007
- Initial Attainment Date(s) : 2009-2010  
*("marginal" ozone would mean 2007)*
- Latest Attainment Date(s) : 2013-2015

## ....addressing the new Ozone Standard

- Multi-step Process w/ Federal and State responsibilities [**“SIP” = State Implementation Plan**]
- Details still in flux (*subject to federal “implementation” rule not yet proposed*) but designation deadlines loom
- Technical analyses converging...but the core planning path is still separate for the two pollutants (*ozone and fine PM*)
- Ozone appears to remain a broader region problem....PM-2.5 may be more focused toward the greater Chicago metro & SE-WI

*It finally is no longer the policy question “if”....instead, “**how to achieve?**”...6 years after new standard adoption in 1997....*

# ***Recommending Nonattainment Area(s) for EPA Designation***



## *Designations - Setting the Stage*

- Designation of an “area” is supposed to address downwind impact on other area’s status - including those within the state
- Area definition & boundary defaults are driven by the CAA & active EPA guidance criteria & are limited by state statute
- Prior area boundary concerns really focused on MSA/CMSA (metropolitan areas), but 8 Hr Ozone & PM-2.5 are more “regional” pollutants than 1 Hr Ozone or PM-10 (or TSP)

## 8-Hr Designation - Clean Air Act

**Designating areas - Federal Law**

**Clean Air Act - Sec 107(A)(i)**

**“Nonattainment” - any area that does not meet *(or that contributes to ambient air quality that does not meet)* the national primary or secondary ambient air quality for the pollutant.**

## *Key Designation Issues for Wisconsin*

- 1 The new designation & SIP development process is forcing Wisconsin to address upwind “contribution” issues *within* the state *(as well as in upwind states)*
- 2 The LADCO states (IL, IN, MI, WI) as a group are not interested in designating a “single”, regional Lake Michigan nonattainment area - so we are likely to focus on WI-only “area” definitions
- 3 Potential “new” Wisconsin ozone areas are at borderline (“marginal”) violation levels
- 4 We may ask EPA to classify particular areas to a next higher category (“moderate”)- for consistent regional attainment dates & control targets

***Ultimately, consistent regional modeling will have to show region-wide attainment based on Attainment Plans (SIPs) from all 4 states***

## *Recommendation Development*

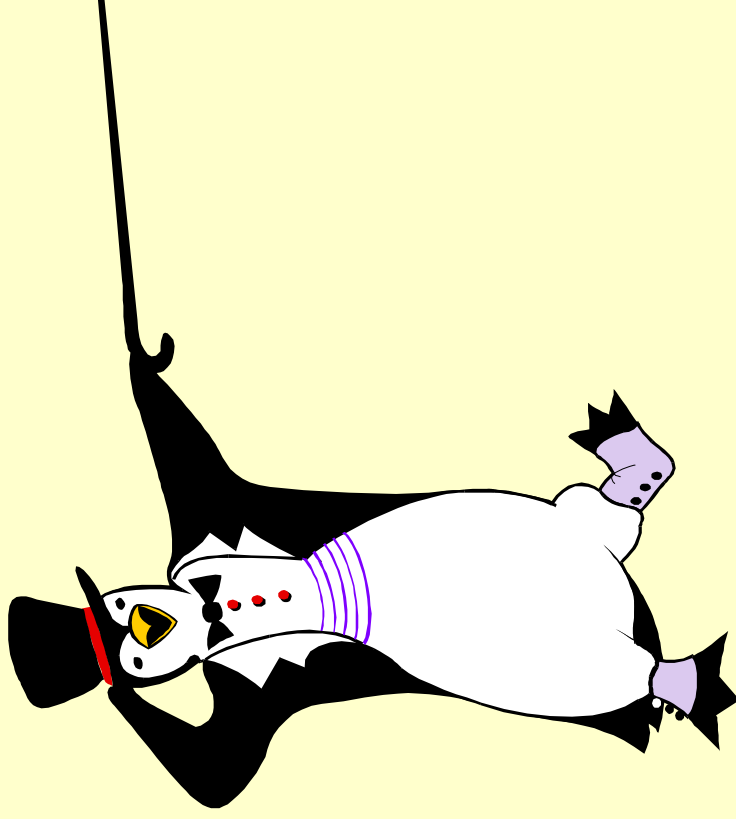
- **Initiated in 2000 after 1997-2000 litigation based on 1997-99 data** (state did not make recommendation)
- **Process restarted this Winter w/ EPA guidance directing state recommendations (current data)**
- **EPA will propose based on initial 2003 data & promulgates after 120 day review/comment period - not subject to litigation**
- **Public Dialogue now to address EPA Designation Criteria and to alert potential new areas**
- **Formal Action is DNR agency proposal for the Governor's signature** (July 15 Letter plus Jan, 2004 Comment on EPA Draft proposal)



## *Ozone Designation - Why would WI broaden area recommended for nonattainment?*

- Most honestly describes the ozone public health problem and the causes of it
  - *Designation of an area is supposed to address downwind impact on other area's status*
  - *Health Impact occurs below the standard's threshold*
- Creates more level development playing field
- Limits problem of “offset credit” access
- ➡ ***Enable a more coherent and more effective control plan to address the expected early attainment date(s)***

# *Explaining the ozone problem....*



## ***2003 Ozone Outreach to date....***

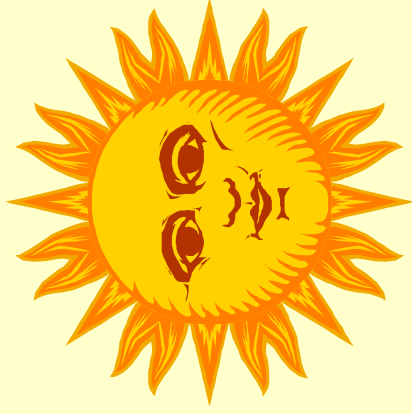
- **Clean Air Act Task Force**
- **Inter-Agency Briefings**
- **Planning, Transportation & Environmental Health Stakeholders**
- **Energy and Industry Stakeholders**
- **Public Outreach Meetings**
- **Clean Air Partners**
- **Regional Partners**

# ***EPA Designations - Area Boundary Criteria....***

## *Ozone Areas - 11 EPA Evaluation Criteria for Contribution Assessment or Changing Boundaries*

- Air Quality Monitor History
- Meteorology during Ozone Episodes
- Emissions Density, Expected Emission Impacts and Key Source Proximity
- Area Development and Projected Activity Growth Patterns
- Total Population and Population Density
- Travel and Commuting Patterns
- Other Economic Linkages between potential areas

***5 Minute Break, then***

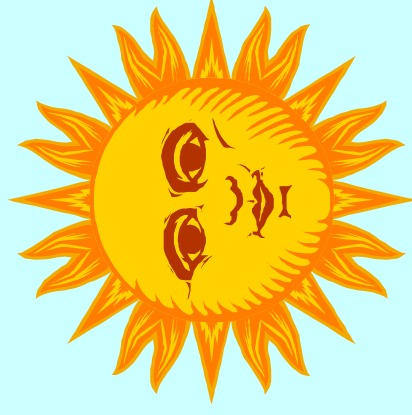


***Visualizing the ozone problem....***

***...and looking at the indicators.***

***Start Slide Set 2***

***5 Minute Break, then***



***Setting the area designation  
sideboards,...peeking at EPA's  
Implementation Plan ... and Gathering  
Initial Perspectives.***

***Restart Slide Set 1***



## *Recommendation - Sideboards*

- **“Minimum” default boundaries are MSA/CMSA or Rural County where violation monitored**
- **Any WI area has to include violating monitor by statute** *(may force one or more multi-county area designations beyond the current six-county Milwaukee area)*
- **Technical support to either enlarge or narrow metro area default, or, for including non-violating counties in new or existing nonattainment areas**  
*(see “criteria” slide)*
- **WI input on designating areas in upwind states is limited, but we may comment on EPA’s 120 day (Dec) proposed designation notice**

## *Ozone Area Definition - Working Perspective*

- Define a smaller number (2 to 4) of “economically connected” & “AQ connected” nonattainment areas .... rather than a single large area
- Broaden geography of NA areas sufficiently to enable coherent control plan development
- Establish a better geographic balance of emission control responsibility ... but still grounded on AQ “impact” and “benefit” on violating sites
- Limit the unintended & inequitable consequences of more narrow definitions (*like the ex-urban development incentive*) compared to the 1990 more localized ozone designations
  - example: QuadGraphics Plant siting decisions

## *What “Nonattainment” means to new areas...*

- ***At a minimum*** - subject to conformity and LAER/Offsets NSR (for VOC & NO<sub>x</sub>) so better AQ, transportation and development plan coordination important to areas
- **Become part of larger 2009/2010 attainment planning process** - will drive much of outcome  
(Plans & some Controls due by 2007)
- **Regional AQ attainment planning could:**
  - **investigate for RACT (& RACM) application to existing facilities *(or a substitute program)* - VOC &/or NO<sub>x</sub>**
  - **investigate if I/M appropriate *(or is there a better substitute effort for “progress” and RACM?)***
  - **investigate if fuels options appropriate or feasible *(among many other strategies)***

## *“Best Guess” Controls in Broadened Area(s)*

- **Classification likely to be Marginal or Moderate** (or Subpart 1 surrogate) - **means 100 ton major source threshold** (*quite large emitters*)
- **All areas likely to need to ensure comprehensive “old” RACT** (the pre-1990 VOC RACT)....esp. if subpart 2
- **RACM applies - either as CTG (categorical) RACT or source-specific for major sources**
- **Incremental Progress Targets (2007 or 2008) with Attainment-level reductions by 2009/10**
- **VOC and/or NOx control (and the related ROP objectives) subject to modeling**
- **NOx waiver expected to go away as regional NOx focus dominates**

# **EPA - 8 Hour Ozone Implementation Rule Update**

- **Signed May 15, 2003**
  - **Subject to 60 Day Public Comment**
  - **No regulatory language - just options description but taking comment**
- **Plan to Propose Final - December 2003**
- **Conformity - Grace Period Addressed**

**<http://epa.gov/airlinks/airlinks4.html#1>**

# EPA Implementation Rule Issues

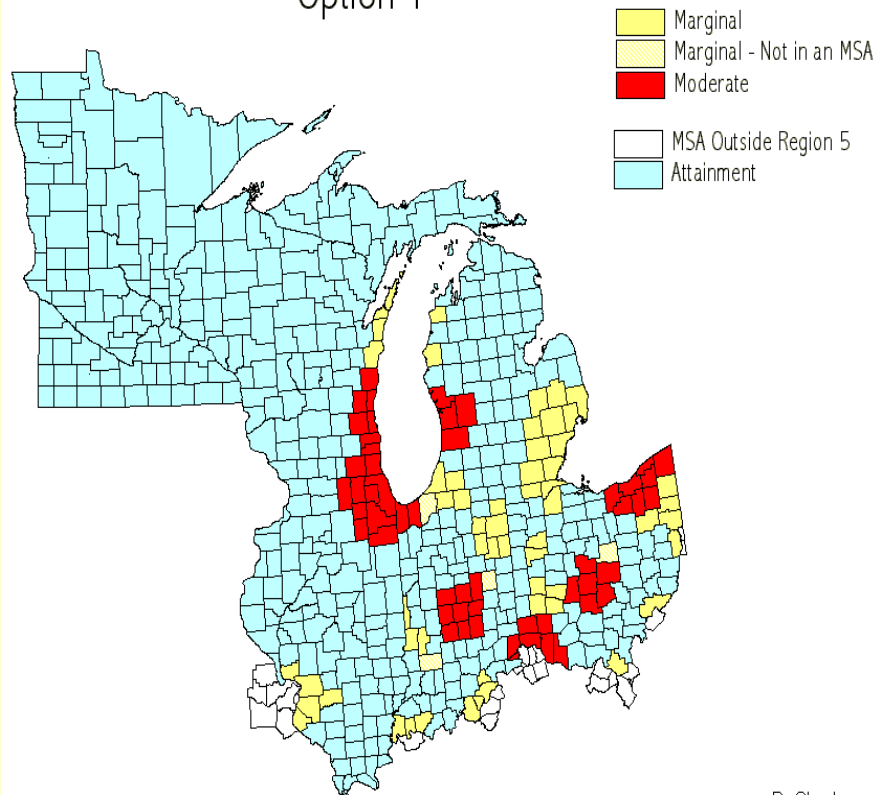
- Area classification & attainment dates
- Timing of designations and classifications
- Transition from 1-hr to 8-hr NAAQS
- Anti-backsliding
- Flexibility vs mandatory controls
- (Regional) Ozone transport issues
- Modeling & attainment demonstrations
- Reasonable further progress (RFP/ROP)
- Reasonably available controls (RACM/RACT)
- Conformity & New Source Review (NSR)
- Optimizing for O3 & PM-Fine
- Tribal issues



# ***EPA Classification Options - Subpart 1 vs 2 for New Areas***

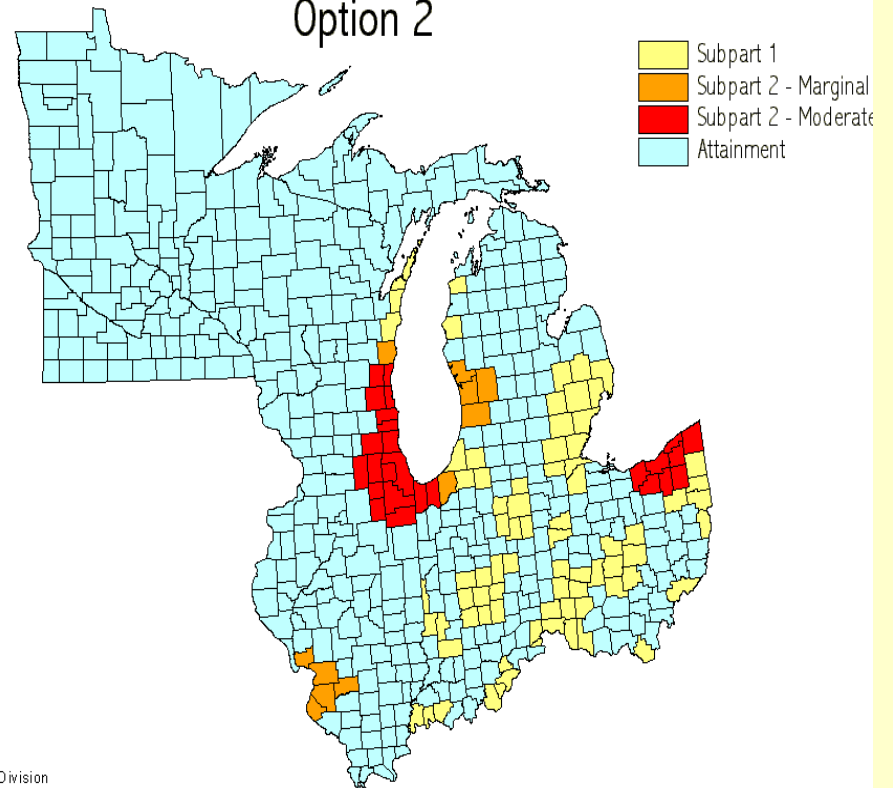
Regional 8-Hour Ozone Nonattainment Areas

Option 1



Region 5 8-Hour Ozone Nonattainment Areas

Option 2



Region 5  
on Division  
Section

*Assuming 2000-2002 data and no new areas from 2003.*



## *EPA has promised to directly address large scale Interstate Pollutant Transport*

- **EPA sponsored Regional Transport Rule**
  - major sources in specified region(s)
  - modeled impact/benefit for PM/O<sub>3</sub>/Haze(?)
  - coordination with other policies
  - proposal spring 2004 & final 2005
  - may or may not displace NO<sub>x</sub> SIP - Phase 2
- **Multi-pollutant Electric Utility Control Legislation**
  - Jeffords and Carper “independent” bills proposed
  - Administration “Clear Skies Initiative” proposed
- **Continued Mobile Sector Efforts**
  - Current focus on proposed new HD Nonroad & Fuels
- **Issue - Timing & Adequate Reductions for 8-Hr Plans**



## *Ozone Designation - Working DNR Schedule*

<b>May 20</b>	<b>- Discuss Preliminary Recommendations w/ CAA-TF [follow-up ~June 16 or 17]</b>
<b>June</b>	<b>- Target Inter-Agency Task Force Meeting on Designation Recommendation Development</b>
<b>May &amp; July</b>	<b>- Brief Natural Resources Board on Recommendations Development</b>
<b>~June 17/18</b>	<b>- CAA-TF – Follow-up on Area Boundary Recommendations</b>
<b>July 15</b>	<b>- Governor's Recommendation Letter to EPA</b>
<b>Late Dec</b>	<b>- Governor's Comment Letter on EPA Proposal</b>

## June CAA-TF Working Session

- **Contribution Technical Data Synopsis**
- **Presentation of Agency Working Area Boundary Recommendation**
- **Feedback by Stakeholders**
  - Total nonattainment area outline
  - Discrete interior area boundaries
  - Key Concerns
  - Suggested Fixes

*.....You gotta have some questions!.....*

## **WI-DNR WEB Site**

<http://www.dnr.state.wi.us/org/aw/air/hot/TaskForce/index.htm>

or

contact : Bob Lopez ( [lopezr@dnr.state.wi.us](mailto:lopezr@dnr.state.wi.us) )

## **EPA WEB Site**

<http://epa.gov/airlinks/airlinks4.html#1>

**“It all adds up to clean air.....”**

<http://www.italladdsup.gov/index.html>

***Zach and friends say thanks!***



***...now - let's Hear from You!***